ABSTRACT

Data communication between two devices (11, 12) over the public powerline network (13) uses a multi carrier technology wherein a communication channel is divided into a plurality of subchannels by frequency division multiplexing. A partial power as part of the total transmission power and a partial rate as a fraction of the total data rate are assigned to each subchannel. ~~as follows:~~

~~Initially, the same partial power is assigned to each subchannel and the S/N ratio of each subchannel is obtained. Starting with the subchannel of the lowest S/N ratio and proceeding to that of the highest S/N ratio, the following steps are performed for each subchannel:~~

~~Firstly, the partial rate is assigned in accordance with the respective S/N ratio such as to result in a predetermined transmission error rate. The assigned partial rate is then quantised to an integral value. If the quantising corresponds to a rounding down, the initially assigned partial power is reduced such that the transmission error rate remains the same as before quantisation. Further, the partial power of other subchannels with higher S/N ratio is increased such that the sum of all partial powers remains constant. Eventually, the increased S/N ratio resulting from increasing the partial power for these subchannels is calculated so that, when the present steps are conducted for them, an optimum partial rate can be assigned to them.~~

~~This method maximises the total data rate of the entire communication channel while the error rate of each subchannel and the sum of all partial power remain constant.~~

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Data communication between two devices (11, 12) over the public powerline network (13) uses a multi carrier technology wherein a communication channel is divided into a plurality of subchannels by frequency division multiplexing. A partial power as part of the total transmission power and a partial rate as a fraction of the total data rate are assigned to each subchannel.